Strategy

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Optimizing Separate Account WAM in a Rising Rate Environment

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Abstract

- *For institutional cash investors unsure of separately managed accounts in a rising interest rate environment, our scenario analysis suggests that a laddered portfolio of agency and corporate securities with a modest WAM could outperform the government money market fund proxy with negligible unrealized loss concerns.*
- *Both agency and corporate portfolios with maximum maturities of up to 12 months may outperform government funds in up to four interest rate hikes in a 12-month period.*
- *Maximum expected unrealized losses are limited to 0.20% or less in worst-case scenarios. Moderate spread tightening in the latter part of a tightening cycle could dampen these "paper" losses.*

Introduction

In the two years since the Federal Reserve started raising short-term interest rates, the psyche of the fixed income investor has been oscillating between loving higher rates and worrying about getting too much of them. With the changing of the guard at the Fed's helm this year, the simmering anxiety about the downside of higher rates—namely unrealized losses—has given pause to some cash investors who otherwise may have wanted to take advantage of higher income potential.

As a manager of institutional separately managed accounts (SMAs), we often counsel investors on the impact of unrealized losses in a portfolio of cash equivalent and short-term securities in a rising rate environment. With the market consensus expecting more than three rate hikes after Fed Chairman Jerome Powell's Congressional testimonies, we thought it appropriate to address this subject this month. Among related research commentaries we published over the last decade, we thought our March 2016 study on optimizing weighted average maturities (WAMs) would offer some helpful insight in today's yield environment. We refreshed relevant yield curve data with rates as of February 28, 2018.

To address maximizing return potential and minimizing unrealized losses, we used a scenario analysis of several sample portfolios to show that, even in a rising interest rate environment, it may still pay to extend WAM in an SMA beyond that of typical government money market funds ("MMF"s).

Scenario Analysis Explained

Six Portfolios: For our experiment, we designed two sets of sample portfolios with laddered maturities: one consisting of agency securities and the other of corporate credits rated Mid-A or higher. For each set, the 3-month portfolio contains three securities with one security maturing each

month (months 1-3). The 6-month portfolio contains six securities with one security maturing each month (months 1-6).

The 12-month portfolio contains 12 securities with one security maturing each month (months 1-12). The WAMs for the two sets of three portfolios are 1.5 months, 3 months, and 6 months, respectively. The portfolios reinvest maturity proceeds at the end of each month for the same maturity at prevailing yield levels so that the WAMs return to the beginning levels for the subsequent month.

Table 1: Sample Portfolios

	Agency Portfolios		Corporate Portfolios	
	No. Securities	WAM (Months)	No. Securities	WAM (Months)
Portfolio A	3	1.5	3	1.5
Portfolio B	6	3	6	3
Portfolio C	12	6	12	6

Three Interest Rate Scenarios: With yield levels and spreads to the Federal Reserve's reverse repurchase agreement (RRP) rate as of the test date, we designed the scenario analysis based on the assumption that the Federal Reserve will raise the overnight rate two to four times in the next 12 months. At each rate increase, all securities are immediately re-priced off of the new benchmark (RRP) rate, thus sustaining instantaneous unrealized losses as the result of the increase (See Table 2).

Table 2: Starting Portfolio Construct (Yield Spread as of February 28, 2018)

Agency Portfolios			Term	Yield	Sprd to RRP	Sprd to RRP	Yield	Term	Credit Portfolios		
			0	1.25%	0.00%	0.00%	1.25%	0			
Port C	Port B	Port A	1	1.50%	0.25%	0.45%	1.70%	1	Port A	Port B	Port C
			2	1.62%	0.37%	0.56%	1.81%	2			
			3	1.66%	0.41%	0.64%	1.89%	3			
			4	1.74%	0.49%	0.72%	1.97%	4			
			5	1.83%	0.58%	0.78%	2.03%	5			
			6	1.87%	0.62%	0.83%	2.08%	6			
			7	1.93%	0.68%	0.87%	2.12%	7			
			8	1.95%	0.70%	0.69%	1.94%	8			
			9	1.99%	0.74%	0.94%	2.19%	9			
			10	2.04%	0.79%	0.98%	2.23%	10			
			11	2.07%	0.82%	1.01%	2.26%	11			
			12	2.09%	0.84%	1.05%	2.30%	12			

Source: Capital Advisors Group based on Bloomberg and broker pricing as of 2/28/2018. Rates vary greatly depending on instrument types and between specific counterparties. For illustrative purposes only.

Yield Spread Assumptions: We obtained fair value pricing for the respective securities with the assistance of our trading staff. The pricing date for our test data sets was February 28, 2018. We then converted those yield levels to spreads over the RRP rate, the lower bound of the fed funds rate (FFR) target range. For the first part of the test, we assumed that the spread relationship of all securities to the RRP would remain constant. For the

second part of our original 2016 study, we increased the credit spreads of each security to the RRP at each rate hike to test the spread widening effect in a rising rate environment. We ran historical yield spread analysis on data from 2004 to May 2005, the first 12 months of the Federal Reserve's previous interest rate tightening cycle. We observed that yield spreads grew wider to FFR only after the first increase. Subsequent rate increases resulted in moderate spread compression, meaning that yield on other instruments rose at a slower pace than the rate increase. For the 2018 update, we projected the credit spreads to tighten modestly resembling the 2004-2005 experience.

Objectives: The analysis has dual objectives - to compare the cumulative yield returns of the various model portfolios under different interest rate scenarios and their maximum potential unrealized losses over a 12-month period. The results would give insight to the appropriate WAM range given a certain path of the FFR. Since we assumed that we would hold all securities to maturity, principal fluctuations from market forces other than those resulting from rate increases were ignored. Also, since we assumed all securities were held to maturity, no actual losses were considered.

RRP as Proxy for Government Money Market Funds: To compare potential SMA returns against money market funds (MMFs), we use the RRP rate to approximate expected government fund yield. We recognize that this is an imperfect science as fund yields may deviate from the RRP rate from time to time. For example, at the time of our 2016 study, the RRP was at 0.25%, while the 7-day SEC yield on the Crane Government Institutional Index was 0.09%. At January 31, 2018, these rates were 1.25% and 1.21%, respectively. Over longer periods, the spread of government fund yields over the RRP tend to be more stable than other short-term instruments. We thus think the RRP is a realistic proxy for the government MMF.

Rate increase scenarios: Given the market's consensus expectation for three interest rate increases in 2018 (See Graph 1), we designed three scenarios for the next 12 months: two, three and four interest rate hikes as follows:

- Two Hikes: March and June of 2018 with 0.25% at each meeting
- Three Hikes: March, June and September with 0.25% at each meeting
- Four Hikes: March, June, September and December with 0.25% at each meeting

Graph 1: Implied Probability of FFR Increases

Current Implied Probabilities — Add/Remove Rates

Dates: Meeting / Calculation — Calculated 02/28/2018 — Based on rate 1.25-1.50

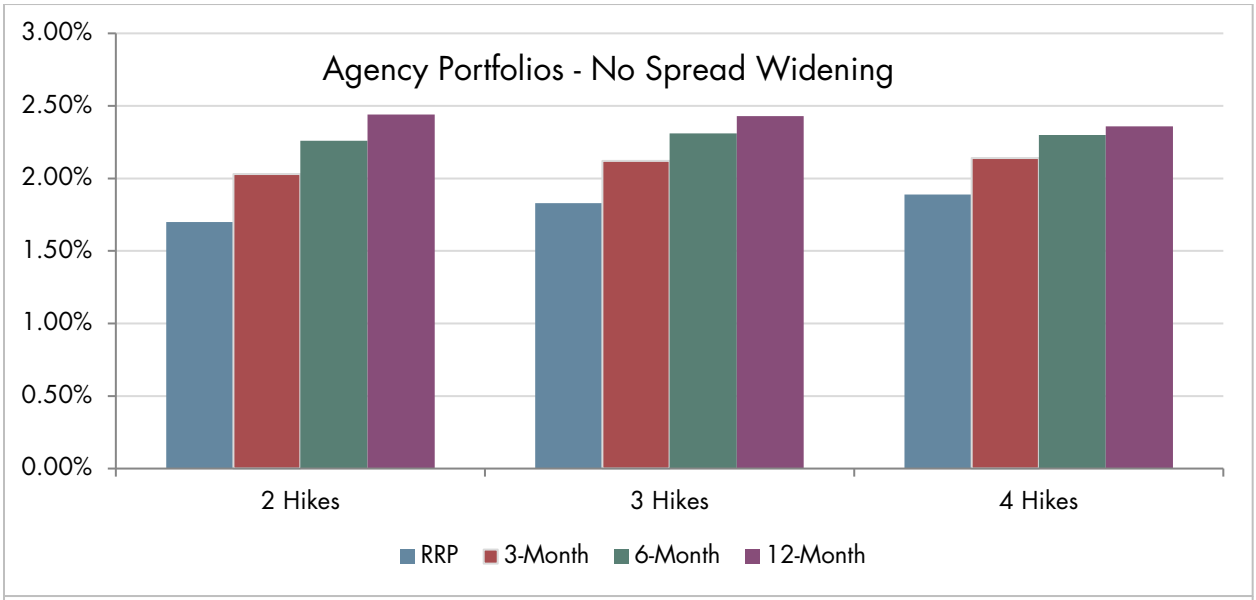
Meeting	Hike Prob	Cut Prob	1.5-1.75	1.75-2	2-2.25	2.25-2.5	2.5-2.75	2.75-3	3-3.25
03/21/2018	100.0%	0.0%	86.0%	14.0%	0.0%	0.0%	0.0%	0.0%	0.0%
05/02/2018	100.0%	0.0%	82.3%	17.1%	0.6%	0.0%	0.0%	0.0%	0.0%
06/13/2018	100.0%	0.0%	18.3%	67.8%	13.4%	0.5%	0.0%	0.0%	0.0%
08/01/2018	100.0%	0.0%	15.7%	60.6%	21.3%	2.3%	0.1%	0.0%	0.0%
09/26/2018	100.0%	0.0%	7.0%	35.7%	43.1%	12.9%	1.3%	0.0%	0.0%
11/08/2018	100.0%	0.0%	5.8%	31.0%	41.9%	17.8%	3.2%	0.2%	0.0%
12/19/2018	100.0%	0.0%	3.9%	22.5%	38.2%	25.9%	8.1%	1.2%	0.1%
01/30/2019	100.0%	0.0%	3.5%	20.7%	36.7%	27.1%	9.9%	1.9%	0.2%

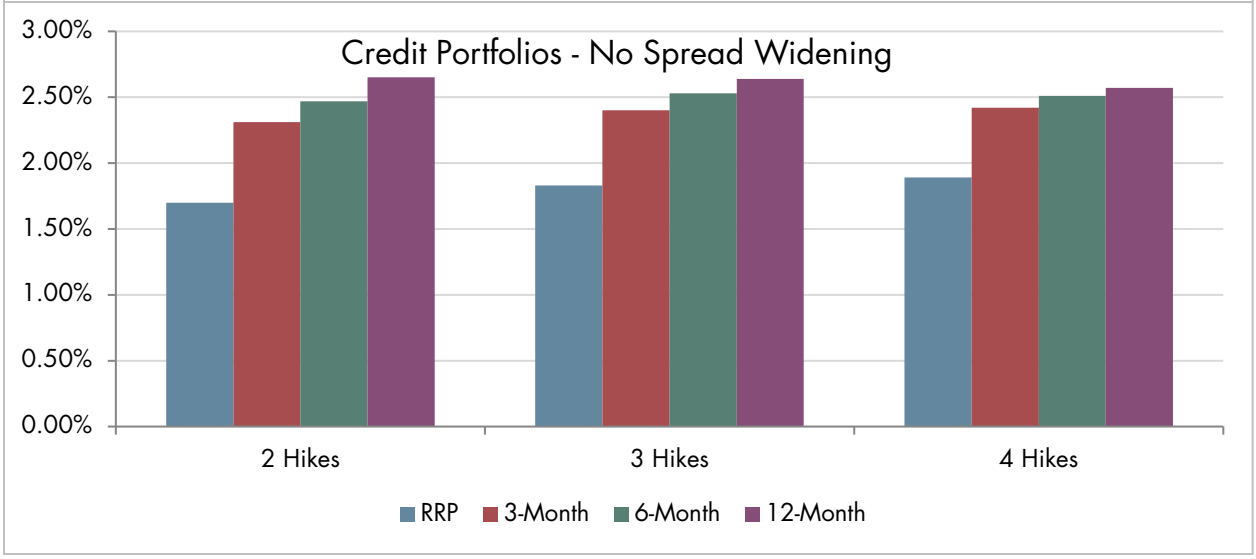
Source: Bloomberg WIRP function as of 2/28/2018.

Test Results with No Spread Widening

With no additional credit spread widening in agency and credit securities, the scenario analysis produced the following results:

Graph 2: Income Return Comparison

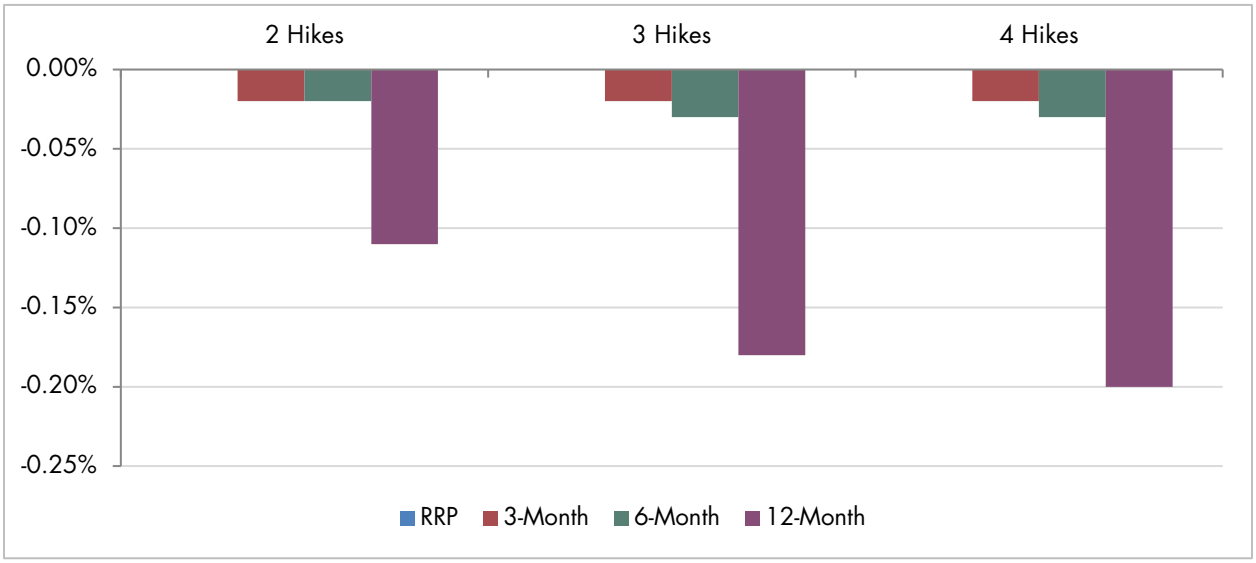




Agency portfolios outperform in all rate hike scenarios: All three agency portfolios outperformed the RRP if the FFR were to increase two, three and four times in a 12- month period. With three hikes, the 3-, 6- and 12-month portfolios would outperform the RRP by 0.29%, 0.48% and 0.60%, respectively. With four hikes, the outperformance would have been higher, at 0.25%, 0.41% and 0.47%, respectively. (All yield data is annualized.)

Credit portfolios outperform in all rate hike scenarios: The outcome for the credit portfolios is similar. Higher income spreads allowed them to outperform the RRP rates in all three scenarios. For example, the 12-month portfolio outperformed the RRP by 0.81% and 0.74% in the 3- and 4-hike situations, respectively. It also outperformed the two other credit portfolios in all the scenarios.

Graph 3: Maximum Unrealized Losses – No Spread Widening



Negligible unrealized losses without spread widening: Graph 3 provides the expected unrealized losses as the result of a higher RRP rate causing a portfolio to reduce in value. As we hold the existing spread relationships constant for both agency and credit portfolios, Graph 3 is illustrative of the credit portfolios. It shows that, for the 3-month and 6-month portfolios, unrealized losses would be less than 0.02% of the portfolio's value in all rate hike scenarios. For the 12-month portfolio, four rate hikes would result in an unrealized loss of 0.20%, or $200,000 for a $100 million portfolio. This is slightly over one quarter of the expected excess return of 0.74% over a 12-month period.

Note that the calculations assume the FFR increased immediately after new securities were added to the portfolio, thus causing maximum potential unrealized losses for each rate hike. With a hold-to-maturity portfolio, however, unrealized losses gradually diminish as securities approach maturity.

Test Results with Spread Widening

Spread widening assumptions: We then conducted the scenario analysis with the effect of spread widening on returns and unrealized losses. We based the test data sets on the last six rate hikes (excluding the first one) in the 2004-2005 rate cycle. We took yield changes along the yield curve between hikes and subtract from them the FFR change to arrive at changes in yield spreads. We then took the average of the six data sets to apply spread widening effects. As we pointed out previously, the figures turned out to be negative, meaning that spreads tightened during the subsequent periods of Fed hikes. See Table 3.

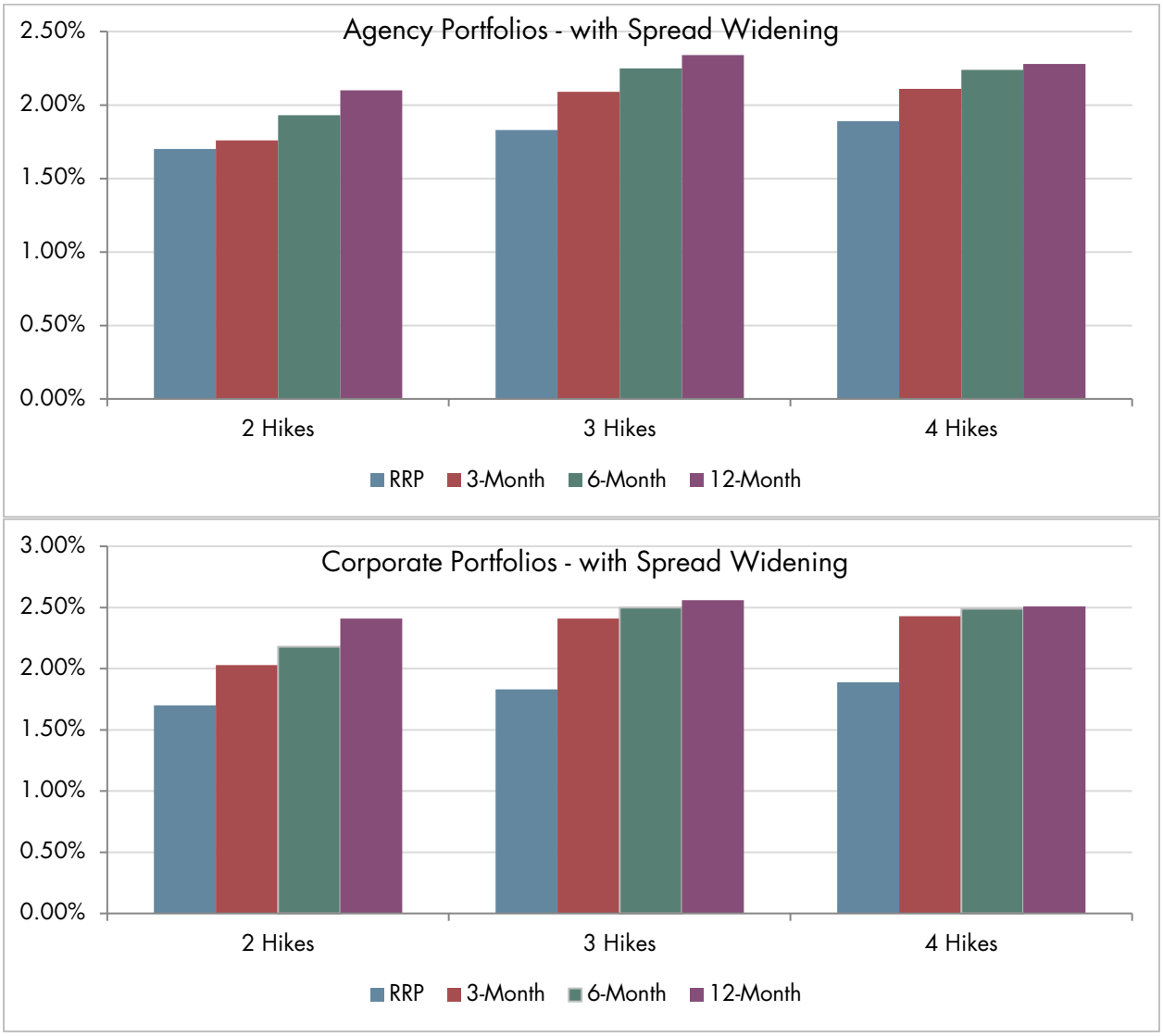
Table 3: Effect of Spread Widening (Tightening) During the 2004-2005 Cycle

Term	Agency	Credit
1	(0.00)	(0.0)
2	(0.00)	(0.0)
3	(0.01)	(0.1)
4	(0.02)	(0.1)
5	(0.03)	(0.2)

6	(0.03)	(0.1)
7	(0.03)	(0.3)
8	(0.04)	(0.4)
9	(0.03)	(0.4)
10	(0.05)	(0.5)
11	(0.05)	(0.6)
12	(0.7)	(0.6)

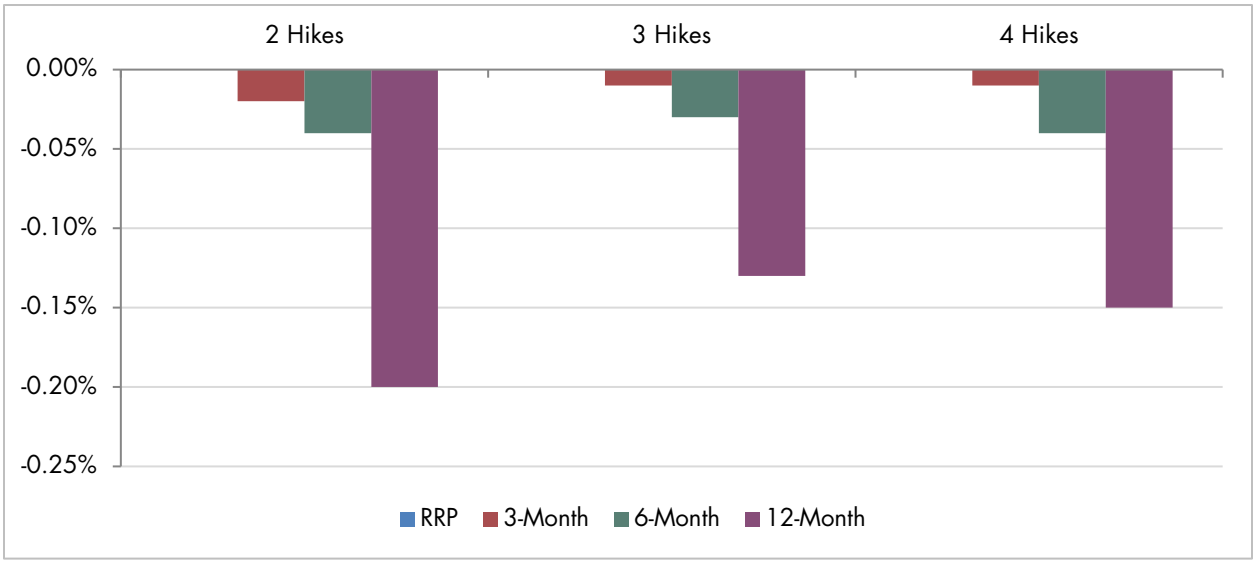
Source: Capital Advisors Group based on Data from Bloomberg

Graph 4: Income Return Comparison - with Spread Widening



Spread effect affirms SMAs outperformance: Graph 4 shows that agency portfolios of all maturities would outperform the RRP in all interest rate scenarios. The same is true with the three corporate portfolios as the result of higher reinvestment opportunities as each maturing security is reinvested at a rate higher than the new RRP rate.

Graph 5: Unrealized Losses in Credit Portfolios – Spread widening



Unrealized losses more noticeable but still modest: As Graph 5 indicates, unrealized losses would remain manageable in all three rate hike scenarios. Interestingly, the 12-month portfolio would have lower unrealized losses in 4-hike vs. 2-hike scenarios, with the latter showing a loss rate of 0.20%, $200,000 for a $100 million portfolio. This is likely the result of spread tightening when yield on credit instruments move up more slowly than the benchmark rate.

Summary Findings

The following highlights provide the summary findings from our scenario analysis:

1. In portfolios of laddered maturities with reinvestment opportunities, agency and credit portfolios with final maturities of 3, 6 and 12 months would outperform the RRP rates in two-, three- or four-hike scenarios over a 12-month horizon.
2. Potential unrealized losses in all scenarios are manageable, with the largest potential loss rate of 0.20% from four rate hikes for both the agency and credit portfolios without spread effect. Spread tightening provided cushioning against these losses
3. In the base-line three-hike scenario (ignoring spread effect), a 12-month agency portfolio has the potential to earn 0.60% more than the RRP over a 12-month period. A 12-month generic A-rated credit portfolio may deliver 0.81% of excess returns over the RRP.

Insight – It Pays to Extend Maturity Even in a Rising Rate Environment

For institutional cash investors unsure of the SMA approach in a rising interest rate environment, our scenario analysis suggests that despite, or because of, a rising rate environment, a laddered portfolio of agency and corporate securities of modest WAM could outperform the government money market fund alternative on income returns with negligible unrealized loss concerns.

For accounts that do not accept credit exposures, agency portfolios may sufficiently defend themselves against two to four rate hikes in a 12-month period if today's yield curve to RRP relationship holds constant. A similarly

structured credit portfolio may deliver even higher outperformance against the government money market fund alternative.

Based on the simulated yield advantage, the decision on an optimal WAM rests with an account's tolerance of unrealized losses from higher interest rates. In our example, a 12-month maximum maturity corporate portfolio may show a paper loss of 0.20% at some point. However, higher coupon income from the credit portfolio would allow it to recuperate such losses faster than an agency portfolio could.

The challenge for the institutional cash investor is to find a balance between progressively higher expected returns as well as expected unrealized losses with each interest rate hike. Note that if an account liquidates part of the portfolio to satisfy an unplanned cash need, the unrealized losses would turn into real losses. Thus, liquidity planning is a relevant factor.

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